USSR

LITOVCHENKO, V. G., et al., Poluprovodnikovaya tekhnika i mikroelektronika, No 5, 1971, pp 108-113

ionization chamber. The application of these optoelectronic modulators permits an increase in their modulation frequency by several orders (by comparison with mechanical dynamic capacitors) and, therefore, use of ordinary alternating voltage amplifiers instead of electrometric input cascades.

TITLE--SWELLING AND ATPASE ACTIVITY OF LIVER MITOCHONDRIA OF RATS FED
   DIFFERENT HEPATIC CARCINOGENS -U-

AUTHOR-(02)-RUBENCHIK, B.L., GORBAN, G.P.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA 1970, 12(5), 678-81

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARCINOGEN, LIVER, MITOCHONDRION, RAT, ENZYME ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0275   STEP NO--UR/9053/70/012/005/0678/0681

CIRC ACCESSION NO--AP0134080
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0134080
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   RATS GIVEN DIETS CONTG.
   P-DIMETHYLAMINOAZOBENZENE, THIOACETAMIDE, OR MONURON FOR 24 WEEKS
   DEVELOPED LIVER MITOCHONDRIA WHICH SWELLED LESS THAN DID NORMAL
   MITOCHONDRIA WHEN SUSPENDED IN BUFFER.   MITOCHONDRIA WHICH SHOWED A
   SMALL DECREASE IN SWELLING HAD GREATER THAN NORMAL ATPASE ACTIVITY,
   WHILE THOSE WITH A LARGE DECREASE IN SWELLING HAD DECREASED ATPASE
   ACTIVITY.   THE ATPASE OF GREATER THAN NORMAL ACTIVITY WAS RELATIVELY
   INSENSITIVE TO IS ACTIVATION BY MG PRIME POSITIVE POSITIVE AND CA PRIME
   POSITIVE POSITIVE.   FACILITY: LAB. CARCINOGENIC SUBST., INST.
NUTR. HYG., KIEV, USSR.

UNCLASSIFIED

USSR

UDC: 621.375.82

GORBAN', I. S., KONONCHUK, G. L., and KONONCHUK, L. P.

"Interference Effects in a Complex Resonator"

Kiev, V sb. Kvant. elektronika (Quantum Electronics--collection of works) "Nauk. dumka," No 6, 1972, pp 127-131 (from RZh--Fizika, No 4, 1973, Abstract No 4D1196)

Translation: The authors examine the possibility of different cavities in a complex ruby laser resonator to lend stability to the interference pattern during free oscillation. It is shown that during the oscillation the light passing through a standard ruby rod markedly spoils its space coherence as a result of dispersion by nonuniformities; hence the light beams reflected by the rod termini do not interfere with one another. In an air cavity, terminus-reflector interference is possible with careful adjustment of the proper reflecting planes. The coherent light in the laser as a function of the amount of dispersion is obtained. Bibliography of 10. Authors' abstract

1/1

USSR   UDC 535.376:621.382

GORBAN', I.S., SULEYMANOV, YU.M., SHVAYDAK, YU.M., PAVLICHENKO, V.I., RYZHIKOV, I.V.

"Infrared Electroluminescence Of Epitaxial P-N Junctions Based On Silicon Carbide"

V sb. Elektrolyuminestsentsiya tverd. tel (Electroluminescence Of Solid Bodies--Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 19-21 (from RZh--Elektronika i yeye primeneniye, No 11, Nov 1971, Abstract No 11B356)

Translation: The paper reports on the infrared electroluminescence spectra of epitaxial p-n junctions based on α-SiC (6H). Of particular interest is the electroluminescence spectrum (IR-II-EL) which consists of three narrow lines 1.184, 1.175, and 1.151 ev (halfwidth .. the order of 1/10 kT at 293° K) which is observed at both room temperature and at the temperature of liquid nitrogen. In addition to the structure IR-II-EL, on other light diodes the infrared bands IR-I and IR-III were observed with energy maxima at 1.35 and 1.07 ev, respectively. A scheme of electron transitions responsible for forming IK-II is proposed. 3 ref. 2 ill. Summary.

1/1

TITLE--ABSORPTION SPECTRA OF FOUR PARTICLE NITROGEN EXCITON COMPLEXES IN
   SILICON CARBIDE -U-

AUTHOR-(02)-GORBAN, I.S., KROKHMAL, A.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(3), 905-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--ABSORPTION SPECTRUM, SILICON CARBIDE, NITROGEN, SINGLE
   CRYSTAL, COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1792   STEP NO--UR/0181/70/012/003/0905/0906

CIRC ACCESSION NO--AP0113762
                         UNCLASSIFIED

CIRC ACCESSICN NG--AP0118762
ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE ABSORPTION SPECTRA OF 4
PARTICLE N,EXCITCN COMPLEXES WERE STUDIED. SINGLE CRYSTALS WERE STUDIED
OF ALPHA SIC (6H) OF N TYPE 2-3 MM THICK AT 2 MUTUALLY PERPENDICULAR
POLARIZATICNS OF THE VECTOR E RELATIVE TO THE HEXAGONAL C AXIS OF THE
CRYSTAL AND AT 86DEGREESK WITH CONCN. OF BASIC CARRIERS 5.4 TIMES 10
PRIME17 MINUS 3.5 TIMES 10 PRIME18 CM PRIMENEGATIVE1. ABSORPTION CURVES
ARE GIVEN FOR THE 2 PCLARIZATIONS. AT E IS PERPENDICULAR TO C2 DOUBLET
ABSCRPTION LINES WERE OBSD. AT PHOTON ENERGIES 2.9828, 2.9945 AND
2.9978, 2.9995 EV, AND A WEAK MAX. AT 3.026 EV. ABSORPTION COEFF. OF
THESE LINES IS LESS THAN1 CM PRIMENEGATIVE1. FROM THE SPECTRAL
POSITION, THE ENERGY SEPN., AND RELATIVE INTENSITIES, THE LINES WITH
ENERGY 2.9928 AND 2.9945 EV CAN BE IDENTIFIED WITH EXCITATION OF
EXCITCNS, LOCALIZED ON S AND RN CENTERS, WHICH ARE COMPOSED OF HOLES OF
THE UPPER VALENCE SUBBAND T SUB6, AND THE ABSORPTION LINES WITH ENERGY
2.9978 AND 2.9995 EV WITH THE EXCITATION OF EXCITONS, LOCALIZED ON S AND
R CENTERS, BUT COMPOSED OF HOLES CF THE LOWER SUBBAND T SUB6. THE
ABSENCE OF THE ABSORPTION LINE CORRESPONDING TO THE P SUBONEGATIVE LINE
OF LUMINESCENCE, IS PROBABLY RELATED TO THE FACT THAT THE BINDING ENERGY
OF EXCITCN WITH P N CENTER IS HALF THAT OF R AND S CENTERS, SO THAT THE
PROBABILITY OF FORMATION OF N EXCITCN COMPLEXES IN THE P POSITION IS
SMALL AT 86DEGREESK CR THAT AN ESSENTIAL ROLE IS PLAYED BY THE PRESENCE
UF AN INTERACTICN BETWEEN IMPURITY ATOMS, AT THESE CONCNS. OF N. AT E
IS PARALLEL TO C 1 ABSORPTICN LINE IS OBSD. AT PHOTON ENERGY 3.040 EV.

CIRC ACCESSION NO--AP0113762
ABSTRACT/EXTRACT--THIS LINE CAN BE RELATED TO THE EXCITATION OF N EXCITON
COMPLEXES, COMPOSED OF HOLES OF THE VALENCE BAND T SUBI.
FACILITY: KIEV. GOS. UNIV. IM. SHEVCHENKC, KIEV. USSR.

/

USSR   UDC 621.791.753.9

LANGER, N. A., Candidate of Technical Sciences, ONOPRIYENKO, L. M., Engineer,
BLASHCHUK, V. YE., Engineer, GORBAN', V. A., Engineer, Electric Welding Institute
imeni Ye. O. Paton of the Academy of Sciences UkrSSR, ISAYEV, M. M., Engineer,
All-Union Scientific Research Institute of the Hydrolysis Industry, Leningrad,
and SHELENKOV, G. M., Sumsk Machinery Manufacture Plant imeni M. V. Frunze

"Corrosion Resistance of Welded Joints of AT3 Alloy in Sulfuric Acid"

Abstract: An experimental study was made of the corrosion resistance and
the change of mechanical properties of AT3 titanium alloy and its compounds
in 0.6-1.2% concentrated sulfuric acid at 180 and 200° C. The results of
electrochemical investigation in 0.9% H_2SO_4 at 90° C show that automatically
welded specimens behave analogously to the base metal and active zone. Manually
welded specimens have an active zone of anodic dissolution; in their passive
zone the current density is $2 \cdot 10^{-2} \text{mA/cm}^2$, which is less than in the base metal
$(4 \cdot 10^{-2} \text{mA/cm}^2)$. Tests conducted with sample specimens revealed that the base
metal corrodes after 44 weldings at a rate of 0.014 mm/year, automatically
1/2

USSR

LANGER, N. A., et al., Avtomaticheskaya Svarka, No 1(250), Jan 74, pp 67-68

welded joint corrodes at a rate of 0.016 mm/year, and a manually welded joint corrodes at a rate of 0.013 mm/year. Two figures, one table, two bibliographic references.

2/2

UNCLASSIFIED

PROCESSING DATE--04DEC70

1/2   035
TITLE--FREQUENCY CONTROL OF AN RL OSCILLATOR -U-

AUTHOR--GORBANEV, B.K.

G

COUNTRY OF INFO--USSR

SOURCE--IZV. VUZ. SSSR ELEKTROMEKH. (USSR), NO. 2, P. 137-9 (FEB. 1970)

DATE PUBLISHED----FEB70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--FREQUENCY CONTROL, AUDIO FREQUENCY OSCILLATOR, OSCILLATOR THEORY, ACOUSTIC TRANSDUCER, ACOUSTIC DAMPING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0144/70/000/002/0137/0139

PROXY REEL/FRAME--3008/0309

ACCESSION NO--AP0137414

UNCLASSIFIED

2/2   035
CIRC ACCESSION NO--AP0137414
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A FEATURE OF THE RL OSCILLATOR
UNDER CONSIDERATION IS THAT ITS FREQUENCY MAY BE CONTROLLED BETWEEN THE
DEVIATION FREQUENCY AND DAMPING OF THE FEEDBACK CIRCUIT, WHEN DIFFERENT
PARAMETERS OF THE CIRCUIT ARE BEING CHANGED. THIS TYPE OF OSCILLATOR
PRODUCES RELATIVELY LARGE FREQUENCY DEVIATIONS (25 PERCENT OR MORE) AT
HIGH GRADIENTS OF THE CONVERSION CHARACTERISTIC. RECOMMENDATIONS ARE
GIVEN FOR THE CHOICE OF CIRCUIT ELEMENTS.

USSR

VUL'F, A. R., BRATANCHUK, A. I., GORBANOV, A. S., VOLYNSKIY, V. V.

"Experimental Studies of the Interaction between Piles and Horizontally Moving Ground"

Translation: This paper gives the results of experimental studies of the interaction between a piling and the soil into which it is driven, where the soil moves horizontally. A description is given of the construction of a stand which simulates the conditions of lateral pressure of the soil on a piling when the head is securely fastened in a grillage foundation. Expressions are derived for the contact stresses on the lateral surface of the piling at various depths, and deflections of the piling as functions of the soil pressure and the magnitude of its compression with respect to the length of the piling. A basis is given for application of the Winkler model to calculation

1/2

- 49 -

USSR

VUL'F, A. R., et al., Sb. Nauchn. tr. Gos. proyektn. i n.-i. in-t Donetskiy PromstroyNIIproyekt, 1970, No 9, pp 170-174

of a piling in the case of lateral pressure, and studies are carried out in this connection on the change in the bed factor with depth where there is lateral pressure, using a special installation, and the corresponding relationship is found. Authors' abstract.

2/2

GORBANYUK   A.G.

quantum-mechanical operators. Kovalev, O. V.; Gorbanyuk,
A. G. (Phys.-Tech. Inst., Kharkov, USSR). J. Phys. Chem.
Solids 1970, 31(1), 149–61 (Eng). The methods of constructions
of Wigner corepresentations in all those cases which can be met in
considering all 674 magnetic space groups, are discussed. To
use known tables of the irreducible representations of usual space
groups, it is necessary to change the description of many magnetic
groups. All cases of such changes are considered. The examples
of direct calcns. of corepresentations are given.   RCKH

Radiobiology

DENISOVA, Ye. A. and GORBARENKO, N. I., Institute of Industrial Hygiene and Occupational Diseases, Academy of Medical Sciences USSR

"Variations of the Syndrome of Neurocirculatory Dystonia in Persons Chronically Exposed to Radiation"

Abstract: The authors report detailed clinical studies on the cardiovascular, nervous, and endocrine systems in 178 X-ray technicians, researchers handling radioisotopes, and other individuals working with sources of ionizing radiation for 10 to 20 years (total dose received 70 to 400 rem) showed most of them to be suffering from headaches, ready fatigability, cardiovascular and functional thyroid and adrenal disorders constituting the syndrome were distinguished according to the level of arterial pressure - hypotensive, hypertensive, and normal. The clinical symptoms and physiological reactions were largely the same as those of individuals suffering from neurocirculatory dystonia not resulting from occupational contact with ionizing radiation.

1/1

USSR

DRONOV, V. S., GORBATENKO, L. S. (Rostov-on-Don Institute of Railroad Transport Engineers)

"Supersaturated Vapors of Crystalline Substances -- Possible Medium for Recording Tracks of Charged Particles"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, August 1970, pp 66-69

Abstract: The possibility of using supersaturated vapors of solid crystalline substances for observing the tracks of charged particles is discussed. In this case the track must be labeled as a chain of crystals growing from the vapors.

Using $C_{10}H_8$ as an example, the authors determine the necessary extent of supersaturation and sensitive period for various values of the charge of formation ion centers near which occur the nucleation and growth of the crystals. The results are shown in the table.

1/2

USSR

DRONOV, V. S., GORBATENKO, L. S., Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, August 1970, pp 66-69

Z	p_r/p_0	ΔT^0	R см/сек	Δz сек
2	6,75	35	$9,6 \cdot 10^{-2}$	$1,05 \cdot 10^{-1}$
3	4,35	26	$5,5 \cdot 10^{-2}$	$1,8 \cdot 10^{-1}$
4	3,30	20	$3,8 \cdot 10^{-2}$	$2,6 \cdot 10^{-1}$
5	2,83	17	$3,0 \cdot 10^{-2}$	$3,3 \cdot 10^{-1}$

Here Z is the charge of an ion; p_r/p_0 is the critical supersaturation; ΔT is the supercooling required; R is the rate of growth of the crystals, calculated from data given by Barton, Carbera, and Frank in the collection "Elementary Processes in the Growth of Crystals (M., p 11, 1959 foreign literature); and $\Delta\tau$ is the required sensitive period.

2/2

USSR

BAUM, I. V.; GORBATENKO, M. V.; ROMANOV, Yu. A. (Lebedev Physics Institute, USSR Academy of Sciences)

"Dynamics of Matrix Space Taking into Account Third-Order Terms in the Lagrangian"

ABSTRACT: The general properties of the dynamics of matrix space, formulated in two previous issues of the same journal (January, 1969; p 222; March, 1970; p 183) by Gorbatenko and Romanov, are used in order to derive the Lagrangian, taking into account the second- as well as third-order terms in the expression for the magnitude of the deviation from the vacuum state. It is proven that all cubic terms in the expressions for physical quantities can be eliminated by means of a suitable invariant transformation. This corresponds to the absence of terms proportional to ψ^3 in the similar expressions of the spinor theory.

The article includes 39 equations. There are two bibliographic references.

1/1

TITLE--INVARIANCE GROUPS AND DIFFERENTIATION IN MATRIX SPACE THEORY -U-

AUTHOR-(02)-GORBATENKO, M.V., ROMANOV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, DOKLADY AKADEMII NAUK SSSR, VOL. 190, NO. 4, 1 FEB 70, PP
805-808
DATE PUBLISHED--01FEB70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--MATHEMATIC MATRIX, MATHEMATIC SPACE, VECTOR, TENSOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0464   STEP NO--UR/0020/70/190/004/0805/0808

CIRC ACCESSION NO--AT0113366
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0113366
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW COVARIANT APPROACH TO THE
THEORY OF A SPINOR FIELD PRESENTED BY THE AUTHORS IN A PREVIOUS ARTICLE
REQUIRED THE INTRODUCTION OF THE NOTION OF A MATRIX SPACE; THE BASIC
PROPERTIES OF A MATRIX SPACE ASSOCIATED WITH THE EXISTENCE OF INVARIANCE
GROUPS ARE DISCUSSED HERE. RULES ARE ESTABLISHED FOR THE
DIFFERENTIATION OF MATRIX TNESORS. FOUR 4 TIMES 4 MATRICES A PRIMEALPHA
(X) ARE GIVEN AT EACH POINT OF A RIEMANN SPACE OF THE GENERAL THEORY OF
RELATIVITY. IF THEY ARE TRANSFORMED AS COMPONENTS OF A 4 VECTOR UNDER A
TRANSFORMATION OF COORDINATES, A PRIMEALPHA (X) IS CALLED A MATRIX
VECTOR. A MATRIX TENSOR WITH AN ARBITRARY NUMBER OF CONTRAVARIANT AND
COVARIANT INDICES IS DEFINED ANALOGOUSLY. ALGEBRAIC OPERATIONS
PERMISSIBLE FOR MATRIX TENSORS INCLUDE MATRIX MULTIPLICATION, ADDITION,
AND COMPLEX CONJUGATION. THE MATRIX SPACE IS DEFINED SUCH THAT THE
MATRIX VECTOR Y PRIMEALPHA (X) IS GIVEN IN RIEMANN SPACE SATISFYING THE
RELATIONSHIP: (Y PRIMEALPHA (X), Y PRIMEBETA (X)) SUBPOSITIVE EQUALS
2G PRIMEALPHABETA (X) TIMES E; WHERE Y PRIMEALPHABETA (X) IS A METRIC
TENSOR. IT IS NOTED THAT FOR A GIVEN G PRIMEALPHABETA (X) THE EQUALITY
(1) DEFINES A SET OF DIRAC MATRICES WITH AN ACCURACY UP TO AN ARBITRARY
UNIMODULAR S(X) TRANSFORMATION. Y PRIMEALPHA YIELDS Y PRIMEALPHA (X)
EQUALS S(X)Y PRIMEALPHA (X)S PRIME NEGATIVE1 (X), DET (S(X)) EQUALS 1.

CIRC ACCESSION NO--AT0113366
ABSTRACT/EXTRACT--OF THE 30 PARAMETRIC S TRANSFORMATIONS, THOSE PARTICULAR
  TRANSFORMATIONS T(X) Y PRIMEALPHA (X) YIELDS Y PRIMEALPHA (X) EQUALS
  T(X)Y PRIMEALPHA (X)T PRIME NEGATIVE1 (X), DET (T(X)) EQUALS 1 ARE FOUND
  WHICH DO NOT DESTROY ANY ALGEBRAIC RELATIONSHIPS BETWEEN MATRIX TENSORS
  AND CAN THEREFORE BE CALLED TRANSFORMATIONS OF THE REPRESENTATION OF THE
  MATRIX TENSORS WHICH ARE IN NO WAY ASSOCIATED WITH THE SELECTION OF THE
  COORDINATE SYSTEM.   IT IS NOTED THAT ALGEBRAIC RELATIONSHIPS CAN BE
  RETAINED UNDER A PARALLEL TRANSLATION OF SPIN TENSORS ONLY BY INCREASING
  THE NUMBER OF TYPES OF SPINOR INDICES UP TO 8 IN THE GENERAL CASE.
    FACILITY: PHYSICS INSTITUTE IMENI P. N. LEBEDEV OF THE ACADEMY OF
  SCIENCES USSR, MOSCOW.

TITLE--UNIFORM STATES OF THE MATRIX SPACE IN THE COVARIANT THEORY OF
   SPINOR FIELD -U-

AUTHOR-(02)-GORBATENKO, M.V., ROMANOV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 2, PP
   183-190

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SPINOR, PERTURBATION, ELECTRON POSITRON PAIR, LINEAR
   APPROXIMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0324   STEP NO--UR/0646/70/003/002/0183/0190

CIRC ACCESSION NO--AP0129556

                              UNCLASSIFIED

CIRC ACCESSION NO--AP0129556
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. A DETAILED DEDUCTION AND ANALYSIS
  HAVE BEEN MADE OF ALL FOUR TYPES OF SOLUTIONS, CORRESPONDING TO THE
  UNIFORM STATES OF MATRIX SPACE WHICH WAS INTRODUCED BY THE AUTHORS (1)
  IN CONSTRUCTING THE COVARIANT THEORY OF SPINOR FIELD. IN ORDER TO
  CHOOSE THE VACUUM TYPE FROM THESE TYPES OF UNIFORM STATES, THE DYNAMICS
  OF LINEAR PERTURBATIONS OF THE UNIFORM STATES IS CONSIDERED AND IT IS
  PROVED THAT ELECTRON POSITIRON STATES ARE CONTAINED IN THE NEIGHBOURHOOD
  OF THE MAJORANA SYSTEM OF DIRAC MATRICES ONLY. IT FOLLOWS THAT IT IS
  THIS SYSTEM WHICH DESCRIBES THE VACUUM STATE OF MATRIX SPACE. THE
  MAJORANA SYSTEM WAS USED IN (1) IN ORDER TO CONSTRUCT THE LINEAR
  APPROXIMATION FOR THE LAGRANGIAN DYNAMICS JF MATRIX SPACE.
  FACILITY: FIZICHESKIY INSTITUT IM. P. N. LEBEDEVA AKADEMII NAUK SSSR.

UNCLASSIFIED

USSR   UDC 531.51

GORBATENKO, M. V. and ROMANOV, YU. A., Physics Institute imeni P. N. Lebedev of
the Academy of Sciences USSR, Moscow

"Invariance Groups and Differentiation in Matrix Space Theory"

Abstract: A new covariant approach to the theory of a Spinor field presented by the
authors in a previous article required the introduction of the notion of a matrix
space; the basic properties of a matrix space associated with the existence of in-
variance groups are discussed here. Rules are established for the differentiation
of matrix tensors. Four 4×4 matrices $A^{\alpha}(x)$ are given at each point of a Riemann
space of the general theory of relativity. If they are transformed as components
of a 4-vector under a transformation of coordinates, $A^{\alpha}(x)$ is called a matrix vector.
A matrix tensor with an arbitrary number of contravariant and covariant indices is
defined analogously. Algebraic operations permissible for matrix tensors include
matrix multiplication, addition, and complex conjugation. The matrix space is de-
fined such that the matrix vector $\gamma^{\alpha}(x)$ is given in Riemann space satisfying the
relationship

$$[\gamma^{\alpha}(x), \gamma^{\beta}(x)]_{+} = 2g^{\alpha\beta}(x) \cdot E; \tag{1}$$

1/2

USSR

GORBATENKO, M. V. and ROMANOV, YU. A., Doklady Akademii Nauk SSSR, Vol. 190, No. 4, 1 Feb 70, pp 805-808

where $\gamma^{\alpha\beta}(x)$ is a metric tensor. It is noted that for a given $g^{\alpha\beta}(x)$ the equality (1) defines a set of Dirac matrices with an accuracy up to an arbitrary unimodular $S(x)$-transformation

$$\gamma^\alpha(x) \rightarrow \gamma'^\alpha(x) = S(x)\gamma^\alpha(x)S^{-1}(x), \quad \det\,[S(x)] = 1.$$

Of the 30 parametric S-transformations, those particular transformations $T(x)$

$$\gamma^\alpha(x) \rightarrow \gamma'^\alpha(x) = T(x)\gamma^\alpha(x)T^{-1}(x), \quad \det\,[T(x)] = 1$$

are found which do not destroy any algebraic relationships between matrix tensors and can therefore be called transformations of the representation of the matrix tensors which are in no way associated with the selection of the coordinate system. It is noted that algebraic relationships can be retained under a parallel translation of spin-tensors only by increasing the number of types of spinor indices up to 8 in the general case.

2/2

USSR   UDC 547.26'118

GORBATENKO, V. I., KRUGLIK, L. I., and SAMARAY, L. I., Institute of Organic
Chemistry, Academy of Sciences, Ukrainian SSR

"Isocyanatodiarylmethyl O,O-Diaryl Phosphonates"

Abstract: Previously it had been shown that ketimines react with phosgene
yielding a mixture of tautomers: N-chlorocarbonylketimine and α-chloroalkyl
isocyanates. The mixture of these tautomers reacted with acid or neutral phos-
phites in presence of triethylamine acting as an acceptor for hydrogen chloride
yielded isocyanatodiarylmethyl O,O-diaryl phosphonates -- viscous light yellow
liquids. They are not exceptionally reactive with primary amines and with
alcohols in presence of catalytic amounts of triethylamine.

1/1

- 25 -

Aeronautical & Space

AKHMED'YANOV, I. S., GORBATENKO, V. V.

"Calculation of a Spherical Shell with Support Around a Rigid Washer"

Translation: The stress state of a spherical shell with a rigid cir-
cular washer and support is studied. The support, made of the same
material as the shell, consists of a circle in the form of a strip of
a spherical shell of greater thickness, in the form of a washer. It
is assumed that the radii of the middle surfaces of the shell and sup-
port are the same. The system is loaded with a force and moment applied
to the washer and acting in a certain meridianal plane. The necessary
calculation formulas are presented for calculation of stresses in the
shell and in the support, as well as the results of certain numerical
calculations. 7 Figures; 4 Biblio. Refs.   Resume

1/1

USSR   UDC 539.3

GORBATENKO, V. V.

"Study of Stresses in a Spherical Shell With Reinforcement Around a Rigid
Circular Disc"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1972,
No. 63, pp 40-46 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V140)

Translation: Numerical calculations of stresses arising in a spherical shell
reinforced by a rigid circular disc under the action of a symmetric load are
presented. The effect of the ratio of the thickness of the reinforcement and
the shell on the nature of the distribution of stresses was investigated.
Author's abstract.
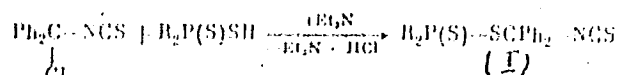
1/1

USSR   UDC 547.26'118

GORBATENKO, Z. I., BONDAR', V. A., and SAMARAY, L. I., Institute of Organic
Chemistry, Academy of Science Ukrainian SSR

"The Reaction of Diarylchloromethylisothiocyanates with Dithiophosphoric
and Dithiophosphonous Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2580-1581

Abstract: Diphenylchloromethylisothiocyanates react with the O,O-diethers
of dithiophosphoric acid and with diaryldithiophosphonous acids in the
presence of triethylamine at room temperature in an inert solvent, resulting
in S-isothiocyanatodiphenylmethyl ethers of the respective phosphorus acid'
as shown below:

$$Ph_2C-NCS + R_2P(S)SH \xrightarrow[Et_3N \cdot HCl]{Et_3N} R_2P(S)-SCPh_2-NCS \quad (I)$$
$$\overset{|}{Cl}$$

$$R = OEt, OPr-i, OPh, Ph.$$

The IR spectra of (I) contain intense absorption bands in the area 2050-2060
cm^{-1} which are characteristic of the NCS group.
1/1

USSR   UDC 547.245

PINCHUK, A. M., GORBATENKO, Zh. K., and FESHCHENKO, N. G., Institute of
Organic Chemistry, Acad. Sc. Ukrainian SSR

"Reaction of Phosphorus Triiodide With Morpholyltrimethylsilane"

Abstract: To a suspension of 0.02 g-mole of PI_3 in 50 ml benzene, 0.02
g-mole of morpholyltrimethylsilane in 10 ml benzene was added with stirring.
The reaction mixture was then refluxed for 1 hr, filtered, and after evapora-
tion of solvents the morpholyldiiodophosphine was obtained in quantitative
yield, m.p. -43 to -40°. When the reagent ratio was 1:2 of PI_3 to morpholyl-
trimethylsilane, the product was the dimorpholyliodophosphine, m.p. 102-104°.

1/1

FESHCHENKO, N. G., GORBATENKO, Zh. T., KOVALEVA, T. V., and KIRSANOV, A. V.,
Institute of Organic Chemistry, Academy of Sciences of the UkrSSR

"Iodides of Phosphorus. IV. Reaction of Phosphorus Triiodide With Organic
Sulfides and Tertiary Amines"

Abstract: An investigation of the reaction between phosphorus triiodide,
organic sulfides and tertiary amines shows that equilibrium conversion of
the triiodide to the diiodide takes place when phosphorus triiodide is
treated with dialkyl sulfides or thiophane. Because of their low basicity,
dibenzyl sulfide and diphenyl sulfide do not convert the triiodide to the
diiodide. When phosphorus triiodide reacts with tertiary amines, polymers
with a low iodine content are formed. Treatment of the triiodide with
pyridine produces the diiodide and a complex comprised of two molecules
of pyridine and one molecule of phosphorus triiodide. Aryldiiodophosphines
react with triethylamine in a 1:1 ratio to form an almost quantitative
yield of diaryldiiodobiphosphines. Cyclic polyarylcyclopolyphosphines
are produced by the reaction of aryldiiodophosphines and diaryldiiodobi-
phosphines with excess triethylamine.
1/1

FESHCHENKO, N. G., GORBATENKO, Zh. K., and KIRSANOV, A. V., Institute of
Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphorus Iodides. III. Reaction of Phosphorus Triiodide With Esters"

Abstract: Simple dialkyl esters react with phosphorus triiodide in an equilib-
rium type reaction to give phosphorus diiodide. At 20° diphenyl ether and
anisol convert phosphorus triiodide to the diiodide only to the extent of
1-3% regardless of the reaction time, probably because of low nucleophilicity.
Phenetol, dibenzyl ether, and tetrahydrofurane react with phosphorus triiodide
both at 20° and 100° forming phosphorus diiodide and alkyl iodides derived
from split ethers. This reaction may be used as a preparative method for
benzyl iodide and 1,4-diiodobutane. Prolonged heating in vacuum leads to
the interconversion of PI_3 and P_2I_4, producing iodine and various byproducts
with lower iodine content.

1/1

ELECTRONICS

Amplifiers

USSR

UDC: 621.375.4

GORBATOV, A. A., SAMSONOV, A. A., VELIKOV, L. V., RUDASHEVSKIY, YE, G.,
Physics Institute, Academy of Sciences of the USSR, Moscow

"A Low-Noise Transistorized Amplifier"

Abstract: The authors describe a transistorized amplifier with an inherent noise
level of about 2 microvolts in the 10 Hz-30 kHz frequency band. The voltage gain
for various measurement conditions varies over a range of 100-1000. The power
to the amplifier is supplied by galvanic cells or storage batteries. Because of
its small overall dimensions, the amplifier can be connected in cable lines and
located close to the signal source. A small batch of amplifiers has been in
satisfactory operation for about a year. The entire unit is accomodated in a box
measuring 40 x 100 x 18 mm.

1/1

USSR

UDC 621.762:669.018.95

GORBATOV, A. G., and KAMYSHOV, V. M., Sverdlovsk Institute of the National Economy

"Electrical Conductivity of Mixtures of Aluminum Nitride and Silicon Nitride"

Abstract: A possible diagram of aluminum nitride disordering is proposed which is based on the measurement of the concentration dependence of electrical conductivity and thermoelectric power of aluminum nitride and its mixtures with silicon nitride. In order to establish a possible mechanism of conductivity in aluminum nitride, a study is made of the electrical conductivity of pure AlN and its mixtures with silicon nitride at different temperatures and partial pressures of nitrogen in the gaseous phase. Polycrystalline cylindrical specimens 18 mm in diameter, produced from powders by hot pressing in graphite press-molds at temperature of $1973-2273^\circ K$ and a pressure of $1.47 \cdot 10^6$ n/m^2, are used in tests. The porosity of articles was less than 5%. After pressing, the specimens were mechanically treated for the removal of carbon from the surface and annealed in a flow of dry ammonia for a period of 10 hrs at temperatures $1273-1373^\circ K$.
1/1

- 37 -

USSR

GORBATOV, A. M., Kalinin State University

"A Generalized Method of Harmonic Polynomials"

Moscow, Yadernaya Fizika, Vol 16, No 4, 1972, pp 699-706

Abstract: The author constructs a new system of generalized hyperspherical
functions by introducing a collective variable of a wider form, equal to the
sum of the squares of some curvilinear coordinates of particles. The system
permits the expansion of the nuclear wave function. The fundamental formulas
of the generalized method are given, and the effectiveness of the method is
demonstrated by using the example of the simplest form of the function $f(r)$
from radial-spherical transformations of the form

$$\xi(r) = \frac{r}{r} f(r), \quad D(r) = \frac{f^2}{r^2} \frac{df}{dr}.$$

1/2

USSR

GORBATOV, A. M., Yadernaya Fizika, Vol 16, No 4, 1972, pp 699-706

The quantitative calculations lead to higher nuclear binding energy values
than in the K-harmonics method. A subsequent article will give data on the
use of the developed method to calculate low-lying levels of 0-16 and Ca-40
nuclei.

2/2

PANOV, V.P., GORBATOV, D.M., PETRUNINA, N.I.* [* Transliterated from Ukrainian]

"Development Of Electron Guns With Ribbon Flow"

Translation: In order to improve the properties of klystrons with a ribbon beam it is desirable to increase the value of the perveance of the flow per unit length. As a result of the study with the use of an electrolytic bath of the effect of the anode aperture, corrections are obtained to the magnitude of the perveance and the dependences characterizing the nonuniformity of current takeoff from the cathode. The basic geometry and experimental data are presented for electron guns with a linear perveance of 133, 220, and 360 microamp/v$^{3/2}$.m with voltages above 10 kv. Summary.

1/1

USSR   UDC 621.385.032.26

GORBATOV, D.N., CHERNYAK, YE.YA.

"Some Problems Of An Experimental Investigation Of Electron Beams"

Translation: During an experimental investigation of the process of shaping and
focusing of an electron beam (EB), the geometry of the EB and the distribution
of the current density were measured at various cross sections. The analyzer
which was developed and the method of measuring the parameters made it possible
to study an EB with any form of cross section. The experimental relationships
were automatically recorded on the tape of electron recording potentiometers,
which made it possible to increase the precision and information of the measure-
ments. The results of measuring the outline of a ribbon diverging EB in the
transanode space of the gun during the presence and in the absence of a channel
close to the surrounding EB are compared with the data of modeling and computat-
ion. Summary.

1/1

USSR   UDC: 621.315.592

BEZDETNYY, N. M., GORBATOV, G. Z., ZEYNALLY, A. Kh., and LEBEDEV,
N. N., Azerbaydzhan State University imeni S. M. Kirov, Baku

"The Photo-EMF Spectral Distribution in SbSI"

Leningrad, Fizika i tekhnika poluprovodnikov, vol 6, No 6, 1972,
pp 1189-1190

Abstract: This brief communication is the consequence of an ear-
lier article authored by some of those named above (Bezdetnyy,
N. M., et al, FTT, 13, 1971, p 1242) in which it was shown that
the near-surface illumination of SbSI layers using light from the
maximum sensitivity region produces a voltage and the flow of
short-circuit currents in the external circuit. These are caused
by the bend in the zones at the ends of the specimen. In the pre-
sent communication, the authors investigate the spectral distribu-
tion of the photovoltaic output of the SbSI layers after dividing
the specimens into two groups depending on the type of bending in
the zones at the ends. The spectral distribution of both groups
is shown.

1/1

GORBATOV, N. Ye.

BASIC PROBLEMS IN THE DESIGNING OF ABSORBING RODS OF FAST POWER REACTORS

[Article by V. I. Matveyev, B. M. Vozhzhennikov, ..., V. P. Smirnov, Physics-Energy Institute, Obninsk; "Fiziko-tekhnicheskiye materialy i ... regulirovaniya bystrykh reaktorov" (Absorbing material and control rods in fast reactors); International Working Group for Fast Reactors Specialists Meeting, Dimitrovgrad, 4-8 June, 1973]

In this work the basic principles of the selection and development of regulation units for fast power reactors are considered. The results of measurements of the efficiency of various materials in BFS assemblies are given. The operating conditions of the regulation units are considered. Various problems of the designing of absorbing rods are discussed. The results of pre-reactor tests with respect to investigations of the compatibility of boron carbide, boron, and europium oxide with steel OKh16N15M3B are given.

1. Physical Principles of the Selection of Regulation Units for Fast Power Reactors

Selection of the method of regulation of a reactor is determined by various factors, the most important ones of which are the provision of the necessary reserve of reactivity; the fast region of energies is characterized by relatively small magnitude of neutron cross-sections, especially absorption cross-sections, for practically all elements. Nevertheless, the most effective method of regulating fast power reactors is the method of regulation by absorbing material, although the selection of such materials is very limited [1]. Calculation and experimental investigations demonstrate that the most effective materials which are of practical interest are materials based on boron-10, europium, rhenium and tantalum. The comparative efficiency of various materials, measured on a model of the BN-350 reactor assembly BFS-16) [2] is presented in Table 1.

- 38 -

GORBATOV, N. Ye.

TESTS OF SAMPLES OF ABSORBING ELEMENTS OF FAST POWER REACTORS IN THE BR-5 REACTOR

[Paper by N. D. Kirov, I. I. Matveyev, B. G. Arabey, B. V. Vorobyev and N. I. Gorbatov, Physics-Energy Institute; Obninskiy Dimitrovgrad; Issledovaniye absorbiruyushchiye materialyi steržani reguliruvaniye sistеm реaktorov (absorbing materials and control rods for fast reactors), International Working Group for Fast Reactors Specialists Meeting, Russian, Dimitrovgrad, 4-8 June, 1973]

In this work the results of radiation investigations of experimental specimens of FEL (absorbing elements) irradiated in the BR-5 fast reactor are given. Absorbing materials based on boron were investigated, and also metallic tantalum and various structures of FEL, hermetically sealed and non-hermetically sealed. Irradiation was conducted in a special cassette, located at the edge of the reactor core, and the general integral flux of irradiation by fast neutrons amounted to 10^{21} n/cm², which corresponds to burn-up in boron-containing materials of ∿2 atomic percent of boron. In the work the basic results are given with respect to gas liberation, swelling and the structure of the irradiated materials, and also data on the physical and thermophysical radiation regimes.

Introduction

Control units are one of the most important elements of the design of a reactor. Their development is associated with the performance of various experimental investigations, including radiation tests giving the most complete information concerning the efficiency of one design or material or other.

In spite of our great experience in the designing of control units for thermal reactors, and the large quantity of con-

- 86 -

USSR   UDC: 519.1

GORBATOV, V. A., DEDEGKAYEV, A. G.

"A Method of Splitting Forbidden Figures in Constructing the Parallel
Decomposition of Systems"

Moscow, Prikl. probl. teorii sistem i sistemotekhniki--sbornik (Applied
Problems of the Theory of Systems and Systems Analysis--collection of
works), 1973, pp 86-93 (from RZh-Kibernetika, No 7, Jul 73, abstract No
7V399)

Translation: By system the authors have in mind here a finite automaton.
A study is made of the possibility of parallel decomposition of automata.
This problem reduces to the problem of coloring a certain graph.

1/1

USSR   UDC 577.4

GORBATOV, V. A., DEDEGKAYEV, A. G.

"Forbidden Configurations for Parallel Decomposition of Automata"

V sb. Ekon.-mat. metody i programmir. plan.-ekon. zadach (Mathematical Economic
Methods and Programming Economic Planning Problems--collection of works), Mos-
cow, 1972, pp 113-120 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V246)

Translation: For decomposition (expansion in a "direct product," that is, in
a system of parallel operating automata) the states of the automaton are pre-
sented in the form of a set of states of several automata, and the transfer
function must be uniquely defined in each of these components. The required
attributes that the automaton be subject to decomposition are indicated in
terms of the problem of coloring the graph of the initial automaton.

1/1

USSR   UDC   577.4

GORBATOV, V. A. and DEDEGKAYEV, A. G.

"Forbidden Figures in the Parallel Decomposition of Automatons"

Moscow, V sb. Ekon.-mat. metody i programmir. plan.-ekon. zadach
(Economic-Mathematical Methods and Plan-Economy Programming--
collection of works) 1972, pp 113-120 (from RZh--Matematika, No 12,
1972, Abstract No 12V246)

Translation: In decomposition (expansion in the "direct product":
i.e., in a system of parallel-operating automatons) the states of
the automaton are put in the form of a set of states of several
automatons, and the function of the transformations must be unique-
ly determined for each of these components. In terms of the prob-
lem of coloring the graph of the original automaton, the necessary
signs that the automaton may undergo decomposition are indicated.
V. Shevyakov

1/1

- 3 -

USSR   UDC 577.4

GORBATOV, V. A., DEM'YANOV, V. F.

"Frequency-Minimal Algorithm of Covering of Boolean Matrices"

V sb. Ekon.-mat. metody i programmir. plan.-ekon. zadach (Mathematical Economic Methods and Programming Economic Planning Problems--collection of works), Moscow, 1972, pp 48-57 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V271)

No abstract

USSR   UDC 51

GORBATOV, V. A.

"Problems of Optimizing Complex Logical Control Systems"

V sb. Ekon.-mat. metody i programmir. plan.-ekon. zadach (Mathematical Econo-
mic Methods and Programming Economic Planning Problems--collection of works),
Moscow, 1972, pp 3-18 (from RZh-Kibernetika, No 12, Dec 72, Abstract No
12V385)

No abstract

1/1

- 24 -

USSR   UDC 621.785:666.152.001.4

STARODUBOV, K. F., SAVENKOV, V. YA., SPIVAKOV, V. I., STOLYAKOV, M. A.,
GORBATOV, V. I., and RUBETSKAYA, M. I.

"Heat Treatment of Steel Plates"

Abstract: Workers of the Institute of Ferrous Metallurgy and the Zhdanov
Metallurgical Institute have developed a method and facility for a new type
of heat treatment of steel plates guaranteeing high rates and uniformity of
cooling. Results of investigations carried out under laboratory and industrial
conditions on steel plates of different thicknesses (3-28 mm) and brands
(3, 20sp, 3 sp, and 14G2SAF) are discussed. An experimental-industrial lot
of 10-mm-thick plates of 14G2SAF steel was heat-treated up to the yield point
of $\sigma = 60-65$ kg/mm^2. Welded joints of 14G2SAF steel showed a loss of
strength of 1-3% after welding. Four illustrations, two tables,
two biblio. refs.

1/1

USSR

UDC 577.4

GORBATOVA, V.,A., MAKARENKOV, S. V.

"Forbidden Configurations in Joint Minimization of a System of Boolean Functions in the Class of Lattice Disjunctive Normal Forms"

V sb. Ekon.-mat. metody i programmir. plan.-ekon. zadach (Mathematical Economic Methods and Programming Economic Planning Problems--collection of works), Moscow, 1972, pp 34-39 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V272)

No abstract

1/1

USSR   UDC 53.081.001

GORBATSEVICH, S. V., and KHOLIN, V. M.

"The Main Areas of Research in the Field of Fundamental Physical Constants, and Prospects for Improving the Accuracy With Which Units of Measurement Are Reproduced"

Khar'kov, Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb. (Ukrainian Republic Scientific and Technological Conference Honoring the 50th Anniversary of the Ukrainian SSR's Metrological Service, 1972 -- Collection of Works), 1972, pp 238-239 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika, No 2, 1973, Abstract No 2.32.54)

Translation: Contemporary work in determining physical constants and defining them more precisely is closely related to the extremely important metrological problems involved in reproducing units based on physical phenomena and -- in particular -- phenomena in atomic physics. The intensive development of research in spectra (particularly their hyperfine structure) led to the creation of atomic standards for time and frequency units. The development of a technique for stabilizing lasers and methods of measuring their frequency and length could result, in the near future, in an improvement in the accuracy with which

1/3

USSR

GORBATSEVICH, S. V. and KHOLIN, V. M., Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972, pp 238-239

the speed of light is measured; the only limitation is the ability to reproduce a meter with an error of only $2 \cdot 10^{-8}$. This barrier can be overcome by changing over to a new definition of a meter and reproducing it by using the wave lengths of the radiation of a stabilized laser. A simple improvement in the accuracy with which optical band frequencies and the speed of light are measured (to a degree of error no greater than 10^{-10} and $1 \cdot 10^{-8}$, respectively) will make it possible to create a single device for reproducing a second and a meter, providing that the speed of light in a vacuum be assigned a value with the required degree of accuracy. The development of absolute methods of measuring gravitational acceleration and the creation abroad of portable absolute gravimeters made it possible to refine the existing Potsdam system, and the question of changing over to a new gravimetric system is now being discussed. The Internal Bureau of Weights and Measures (France) should be considered as the most logical center for a gravimetric system. At the present time, gravitational acceleration is being measured with an error no greater than $3 \cdot 10^{-6}$ in a number of places (IBWM, NBS, NPL.) This degree of accuracy eliminated the error that is related to the gravitational acceleration error involved in reproducing a newton, pascal, or ampere. The present method of reproducing an

2/3

- 64 -

USSR

GORBATSEVICH, S. V. and KHOLIN, V. M., Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb. pp 238-239

ohm -- according to the capacity of a rated condenser and according to frequency -- insures a degree of accuracy for which the error does not exceed $2 \cdot 10^{-7}$. However, there is an error in the very value given for the capacity, related to the error in the speed of light, that is estimated to be $(0.6-0.7) \cdot 10^{-6}$. There are a number of relationships between physical constants that make it possible to reproduce an ampere or a volt. The main problem in this case is to overcome the "geometric barrier," which is the basic source of error when reproducing an ampere or a volt. The problem of maintaining an ampere or a volt by using physical constants can now be considered solved, with a degree of accuracy for which the error does not exceed $1 \cdot 10^{-7}$ or even $5 \cdot 10^{-8}$.

3/3

USSR   UDC: 389.0(017)

GORBATSEVICH, S. V.

"Determination and Reproduction of Units of Physical Quantities"

Moscow, Metrologiya, No 12, 1972, pp 3-26.

Abstract: Problems of the definition of units of physical quantities, their
reproduction and maintenance are discussed. Immediate prospects for the devel-
opment of metrology in its highest aspect, the development of standards, are
discussed. The article analyzes fundamental problems of the sections of
metrology related to the structure of standards, to the actual reproduction of
units of physical quantities and maintenance of their values. The article is
printed as a discussion, in order to form a foundation for a more fully devel-
oped discussion of the problem of standards in its national and international
aspects.

1/1

THE IMPORTANCE OF THE ANGLE OF DEFLECTION OF THE SUPERIOR MESENTERIC ARTERY FOR ITS REIMPLANTATION INTO THE AORTA

K. Ya. Chuprakova, V. I. Gorbatyuk

The coefficient of local resistance grows and the deflection angle of the artery increases. The angle of deflection of the artery during its reimplantation into the aorta should not exceed $90°$, otherwise the intestine becomes ischaemic and ends in infarction.

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REEL/FRAME
19741758

02 kc

USSR

UDC 541.69:661.718.1

MASTRYUKOVA, T. A., SHIPOV, A. E., GORBENKO, E. B., KABACHNIK, M. I., KAGAN,
YU. S., YERSHOVA, YE. A., SHABANOVA, M. P., and SAVCHENKO, K. N., Institute
of Heteroorganic Compounds, Academy of Sciences USSR

Abstract: In an earlier article the authors examined a new type of selective
insecticides and acaricides, viz. derivatives of mono- and dithiophosphoric
acids containing amino acid residues, their esters and methylamides.
The present article deals with an analogous series of methyl dithiophos-
phonates, obtained by the reaction of the corresponding chloroacetyl deriva-
tives of amino acids or their esters with ammonium O-ethyl methyldithiophos-
phonate. It was found that compounds of this series are more toxic for
arthropods and warm-blooded animals than the corresponding dithiophosphates.
Substances containing a free carboxyl group are the least toxic. A study of
the insecticidal and acaricidal activity of the resultant compounds shows
that they are more characterized by acaricidal activity and that they are more
1/2

- 66 -

USSR

active insecticides and acaricides than the corresponding phosphates, but
the selectivity of their effect on arthropods is weaker than in the case
of dithiophosphates. A comparison of the effect of these two groups on
arthropods and warm-blooded animals shows greater selectivity in the case
of methyl dithiophosphonates.

2/2

GORBENKO, F. P., KUCHKINA, YE. D., and OLEVINSKIY, M. I.

"Extraction Recovery of Alkali Earth Elements from Rare Earth Elements"

Abstract: The authors discuss a method of extracting alkali
earth elements from rare earth elements from an acid solution in
the form of thiocyanate complexes. Extraction of a mixture of
alkali earth elements was studied as a function of the acidity of
the solution. It was found that the alkali earth elements are
extracted from a comparatively acid solution; 50% is extracted
from a 1 M solution with respect to HCl. Optimum acidity was taken
as 0.1 M with respect to HCl. An investigation of the effect
which the thiocyanate ion concentration has on the extraction pro- —
cess showed that maximum extraction takes place at a concentration
of NaSCN equal to 2.4 M. To eliminate interference from rare earth
elements in the extraction of alkali earth elements, ethylenedia-
minetetraacetic acid sodium salt was used for masking since it
forms fairly stable complexes with rare earth metals in weakly acid
solutions while the alkali earth elements do not form complexes
under these conditions. The method may be used for individual

TITLE--EXTRACTION AND COMPLEXOMETRIC DETERMINATION OF A CALCIUM TRACE
   IMPURITY IN TUNGSTEN AND ITS COMPOUNDS -U-

AUTHOR-(03)-GORBENKO, F.P., VOLODKO, YE.U., NEMIROVSKAYA, YE.M.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(3), 277

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--TUNGSTEN COMPOUND, TUNGSTEN ALLOY, TRACE ANALYSIS, CALCIUM,
   METAL CHEMICAL ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0430   STEP NO--UR/0032/70/036/003/0277/0277

CIRC ACCESSION NO--AP0126183
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0126183
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISSOLVE 1-2 G OF SAMPLE IN 12 ML
OF 20PERCENT NAOH WITH HEATING. ADD DROPWISE 3 ML 50PERCENT SOLN. OF
TARTARIC ACID (TO DISSOLVE CAWO SUB4) AND BOIL TILL THE SOLN. BECOMES
CLEAR. COOL AND ADD H SUB2 O TO MAKE 35 ML. EXT. CA WITH 35 AND 15 ML
OF AT (AZO,AZOXY BN IN CCL SUB4 PLUS 20PERCENT BU SUB3 PO SUB4).
COMBINE THE EXTS. AND REEXT. CA WITH 50 ML 0.1N HCL. ADD NH SUB4 OH AND
TITRATE WITH 0.01N EDTA UNTIL THE BLUE COLOR OF METHYLTHYMOL BLUE
CHANGES TO LIGHT GREY. PREP. A BLANK IN THE SAME WAY. FOR THE DETN. OF
LARGER THAN OR EQUAL TO 0.01PERCENT CA THE RELATIVE ERROR IS 3.5PERCENT.
       FACILITY: VNII REAKTIVOV KHIM. CHIST. MATER. ELEKTRON. TEKH.,
DONETSK, USSR.

UNCLASSIFIED

USSR   UDC 536.248.2.001.5

GORBENKO, V. A., and BAKLASTOV, A. M.

"On the Question of Condensing Vapor Out of Vapor-Bearing Media Onto
Porous Surfaces, and Removal of Condensate through Capillaries"

Dokl. nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot
za 1968-1969 gg. Sekts. Promteploenergetiki. Podsekts. Sushil'n
i teploobmen. ustroistv (Reports of the Scientific-Technical Conference
on Summaries of Scientific Research Work for 1968-1969. Industrial
Thermal Engineering Section, Subsection on Desiccating and Heat
Transfer Devices), Moscow Power Engineering Institute, 1970,
pp 103-108 (from RZh-Teploenergetika, No 5, May 70, Abstract No 5G88)

Translation: Experimental values have been determined for the pressure
drop required to evacuate condensate through glass and steel capillaries
with diameters of 0.25 and 0.4mm, and lengths up to 60mm. Two figures,
nine references.

1/1

1/2   015   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--COHERENT BREMSSTRAHLUNG IN A DIAMOND SINGLE CRYSTAL -U-

AUTHOR-(05)-GORBENKO, V.G., ZHEBROVSKIY, YU.V., KOLESNIKOV, L.YA.,
   MIROSHNICHENKO, I.I., ROMASKO, L.M.
COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(5), 1044-8

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--DIAMOND, SINGLE CRYSTAL, PHOTON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1232   STEP NO--UR/0367/70/011/005/1044/1048

CIRC ACCESSION NO--AP0136643
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0136643

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. QUASI MONOCHROMATIC POLARIZED PHOTON BEAM WAS OBTAINED FROM A DIAMOND SINGLE CRYSTAL AT THE KHARKOV 2,GEV EPSILON LINEAR ACCELERATOR. THE INTEGRAL INTENSITY OF PHOTONS MEASURED WITH QUANTAMETERS WAS 5 TIMES 10 PRIME9 EQUIV. GAMMA QUANTA IN 1 SEC WITH THE MEAN CURRENT OF EPSILON FLUX 0.2 MUA. THE COHERENT EFFECT WAS INVESTIGATED BY MEASURING INTEGRAL PHOTON AND SECONDARY ELECTRON INTENSITIES AS FUNCTIONS OF THE DIAMOND ORIENTATION ANGLES RELATIVE TO THE INCIDENT EPSILON MOMENTUM. INTENSITY AND POLARIZATION SPECTRA OF THE PHOTON BEAM ARE GIVEN. THE PHOTON POLARIZATION WAS ESTD. FROM THE RESULTS OF THE (GAMMA,RHO) REACTION STUDIED IN THE 1ST PI N RESONANCE REGION.   FACILITY: FIZ.-TEKH. INST., KHARKOV, USSR.

UNCLASSIFIED

PINES, B. YA., KUZNETSOVA, R. I., and GORBENKO, V. N., Khar'kov
State University imeni A. M. For'kiy

"High-Temperature Deformation of Copper and Nickel Films One
Crystal in Thickness During Creep"

Abstract: Measurements of various types of deformation develop-
ing in copper and nickel films one crystal thick during high-
temperature creep in the low stress area were performed. It
was established that under theseconditions, slipping deformations
along grain boundaries are very significant, reaching 60-80% of
the total deformation. The non-monotonic dependence of grain-
boundary deformation on stress is compared to the presence of a
linear creep limit and the change in the mechanism of internal
grain deformation of the metals in this stress area.

1/1

USSR

UDC 577.472/26/

GORBENKO, Yu. A.

"An Estimate of the Initial Effectiveness of Copper-Containing Paints on the Basis of Their Color Change under the Influence of Sea Water and Bacteria"

Kiev, Biologiya Morya -- Sbornik (Biology of the Sea -- Collection of Works), No 18, The Biology of Fouling, pp 18-26

Abstract: For estimating the initial effectiveness of antifouling paints it is proposed to make use of the appearance of a bluish or greenish tint, due to copper salts, on the surface of the paints. This phenomenon is brought about by the joint action of sea water and heterotrophic bacteria upon the film-forming base of paints which contain cuprous oxide as the basic poison. The essence of the method consists in the immersion of plates, painted with various anti-fouling paints, into the sea for various periods of time and subsequently breeding, in a number 4 agar medium, colonies of the hetero- trophic bacteria that had settled on the paints. Copper is determined visu- ally in the medium in the form of tinted salts, and analytically by means of ditizone. Comparison of the results of observations of the experimental
1/2

USSR

GORBEIIKO, Yu. A., Biologiya Morya -- Sbornik, No 18, pp 18-26

paints with an effective standard paint will make it possible to determine
the initial relative effectiveness of the paints. 12 bibliographic entries.

2/2

USSR

UDC 621.376.234

GORBIK, V. V., MALYSHEV, V. A.

"An Asynchronous UHF Detector Based on a Tunnel Diode"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices and Their Application--collection of works), Vyp. 23, Moscow, "Sov. radio", 1970, pp 251-256 (from RZh-Radiotekhnika , No 10, Oct 70, Abstract No 10D31)

Translation: With the equivalent circuit of the detector as a basis, an expression is derived for the amplification factor. The frequency properties are discussed. Bibliography of five titles. Authors' abstract.

1/1

- 2 -

. USSR

UDC: 536.24:536.42:669-154

GOREIS, Z. R. and BERMAN, M.I.

"Process Investigation of Water Boiling in Porous Medium"

Odessa, 11-ya Vses. Konf. pa Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1971 (11th All-Union Conference on Problems of Evaporation, Combustion and Gas Dynamics of Dispersion Systems, 1971), 1972, pp 71-72 (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2B903)

Translation: Experimental Investigation was conducted of the process of water boiling in porous medium under atmospheric pressure and with electric heating of a horizontal heating surface. Effects were investigated of height, type of material, size of pores and differential temperature on beginning of boiling, heat transfer intensity, magnitude of heat flow and its limit indicated by the heat surface burn-out.

It is established that availability of dispersion mass results in reduction of the critical heat flow with Archimedes number

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USSR

GORBIS, Z. R. and BERMAN, M. I., 11-ya Vses. Konf. pa Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1971, 1972, pp 71-72

$$A = g \, d_T^3 \, (\mathcal{S}_T - \mathcal{S}_{\textit{ж}})/\mathcal{S}_{\textit{ж}} \, V_{\textit{ж}} = 5 \times 10^5 \div 4 \cdot 10^6$$

$$\beta = G_T/F = 70 \div 300 \; kg/m^2$$

The results obtained indicate three boiling regimes under above conditions. Two design relations are obtained for a dispersion mass of limit density. The difference between the two is explained by the interaction of two mechanisms; generation of steam bubbles along the wall and convection removal of steam by filtration through the dispertion mass. The effect of the first mechanism is believed to prevail with small Δt, of the second with large Δt; the limiting effect of the second mechanism causes a process crisis with the increase of Δt.

2/2

- 48 -

1/2   031

UNCLASSIFIED

TITLE--HEAT TRANSFER IN UNIFORM MIXTURE OF TWO DISPERSE MATERIALS -U-

PROCESSING DATE--23OCT70

AUTHOR-(03)-GORBIS, Z.R., KNYAZEV, L.P., KUKLINSKIY, V.V.

COUNTRY OF INFO--USSR

SOURCE--INZHENERNO-FIZICHESKIY ZHURNAL, 1970, VOL 18, NR 1, PP 45-51

DATE PUBLISHED-------7C

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HEAT TRANSFER, MATERIAL MIXING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/2004

STEP NO--UR/0170/70/018/001/0045/0051

CIRC ACCESSION NO--AP0120647

UNCLASSIFIED

CIRC ACCESSION NO--AP0120647   UNCLASSIFIED   PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. FIG. 1. NU VERSUS D SUB1 (D SUB1, MM): 1, COOLING OF METAL SPHERE IN FILLING OF METAL SPHERES (D SUB2 EQUALS 4.76 MM) IN THE TEMPERATURE RANGE 660-250DEGREESC: 2. THE SAME IN THE RANGE OF TEMPERATURES 250-100DEGREES C; 3. COOLING OF METAL SPHERE IN SEMI COKE FILLING IN THE RANGE FROM 600 TO 250DEGREESC (D SUB2 EQUALS 3 DIVIDED BY 5 MM): 4. COOLING OF METAL SPHERE IN THE TEMPERATURE RANGE 350-100DEGREESC.   FIG. 2. SCHEME OF EXPERIMENTAL INSTALLATION: 1. DRYING CABINET; 2. WOODEN BOX; 3. SPHERES; 4. PURCELAIN GRID; 5. SAND; 6. COLD THERMOCOUPLE JUNCTION; 7. GALVANOMTER.   FIG. 3. COMPARISON OF PREDICTED AND EXPERIMENTAL DATA (TAU, MIN): 1. CALCULATION BY NUMERICAL METHOD; 2. EXPERIMENTA; DATA; 3. CALCULATION BY METHODS.   FIG. 4. COMPARISON OF NUMERICAL SOLUTIONS AND THOSE BY EQUATIONS (9), (10) (TAU MIN):   1. NUMERICAL CALCULATION; 2. BY EQUATIONS (9), (10).   SUMMARY. HEAT TRANSFER IN DISPERSE SYSTEM OF IMMOVABLE UNIFORM MIXTURE OF COARSE AND FINE DISPERSE MATERIALS IS CONSIDERED. THE PROBLEM IS SOLVED AT BOUNDARY CONDITIONS OF THE IV KIND. .SOLUTIONS OF THE PROBLEM ARE COMPARED WITH EXPERIMENTAL DATA. EXPRESSIONS ARE RECOMMENDED FOR CALCULATION OF THE CHANGE IN TEMPERATURE OF MIXTURE COMPONENTS AND TIME OF THERMAL EQUILIBRIUM ONSET.

UNCLASSIFIED

TITLE--INCREASE IN THE PHYSICOMECHANICAL PROPERTIES OF CONCRETE HARDENING
   AT SUBZERO TEMPERATURES -U-

AUTHOR-(05)-GORBONOS, YE.P., GOGIN, V.F., KOLKIN, A.P., GORBONOS, A.D.,
   RATINOV, V.B.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 267,425

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--01APR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CONCRETE, COLD HARDENING, LOW TEMPERATURE EFFECT, CALCIUM
   COMPOUND, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1415   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128814
                         UNCLASSIFIED

CIRC ACCESSION NO--AA0128814   UNCLASSIFIED   PROCESSING DATE--20NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHYSICOMECH. PROPERTIES OF
COLD CONCRETE WERE INCREASED BY INTRODUCING COMPLEX ADDITIVES INTO THE
CONCRETE MIXT. TO SPEED UP THE HARDENING OF CONCRETE AT MINUS 25DEGREES
AND COMBINED WITH THE THERMOS METHOD AT MINUS 50DEGREES, A MIXT. OF CACL
SUB2 AND CA NITRITE NITRATE 7-25PERCENT ON THE WT. OF THE MIXING WATER
WAS USED FOR THE ADDITIVE.

UNCLASSIFIED

TITLE--DIAMIDE BASED COMPLEX SALT -U-   PROCESSING DATE--27NOV70

UNCLASSIFIED

AUTHOR-(05)-GORBONS, YE.P., YEGOROV, V.P., SMALIY, N.I., GALUSHKA, V.P.,
   MASTEROV, A.P.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,377

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)

DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, NITRATE, NITRITE, UREA, COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1448   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0126979

UNCLASSIFIED

CIRC ACCESSION NO--AA0126979   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   COMPLEX SALTS BASED ON A DIAMIDE,
  E.G. CA NITRITE, AND UREA.   THE MOLAR RATIO OF UREA TO CA NITRATE PLUS
  CA NITRITE IS 4-1:1.

UNCLASSIFIED

1/2   023   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--INCREASE IN THE PHYSICOMECHANICAL PROPERTIES OF CONCRETE HARDENING
 AT SUBZERO TEMPERATURES -U-
AUTHOR-(05)-GORBONOS, YE.P., GOGIN, V.F., KONKIN, A.P., GORBONOS, A.D.,
 RATINOV, V.B.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 267,425
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CONCRETE, COLD HARDENING, LOW TEMPERATURE EFFECT, CALCIUM
 COMPOUND, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1415   STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0128814
                            UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AA0128814

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHYSICOMECH. PROPERTIES OF COLD CONCRETE WERE INCREASED BY INTRODUCING COMPLEX ADDITIVES INTO THE CONCRETE MIXT. TO SPEED UP THE HARDENING OF CONCRETE AT MINUS 25DEGREES AND COMBINED WITH THE THERMOS METHOD AT MINUS 50DEGREES, A MIXT. OF CACL SUB2 AND CA NITRITE NITRATE 7-25PERCENT ON THE WT. OF THE MIXING WATER WAS USED FOR THE ADDITIVE.

UNCLASSIFIED

USSR

UDC 613.647:621.396.932

GORBONOSOVA, N. B., and USPENSKAYA, N. V., Institute of Labor Hygiene and Occupational Diseases, Leningrad

"Health Status of Ship Radio Operators"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 7, 1971, pp 41-44

Abstract: Examination of 100 radio operators working on ships from 5 to 20 years revealed a high incidence of neurological (46), cardiovascular (25), otorhinolaryngological (20), pulmonary (6), and gastroenterological (5) diseases, whereas in a control group of 45 sailors (all conditions the same except for exposure to high-frequency electromagnetic fields) there were 11 cases of neurological diseases and 2 cases of cardiovascular diseases and no other pathology. Irritability, headaches, insomnia, pain in the heart, and hidrosis were common subjective complaints. The findings indicate that many radio operators suffer from a definite symptom complex consisting of neurological, circulatory, degenerative, and hematological disorders. The fact that they occur more frequently than in other ship personnel and that they increase with length of service suggest that they are the result of prolonged chronic exposure to an occupational factor.
1/1

USSR ·

LORANSKIY, D., Deputy Chief Sanitary Doctor of the USSR, GORBOV, V., Doctor of Medical Sciences, and STEPANOVA, L., Senior Inspector, Main Sanitary and Epidemiological Administration, USSR Ministry of Health

"Protecting the Soil Against Contamination"

Moscow, Meditsinskaya Gazeta, 24 Dec 71, p 2

Abstract: In recent times there has been an increase, which is expected to continue, in the use of sewage from small cities and communities for purposes of irrigation, with purification occurring through soil processes. Worries have been expressed concerning this because disease pathogens might reach human beings (either through food or directly with farm workers) as a result, and some types and quantities of pollutants may destroy the biological community in the soil which would normally purify waste water. Under correct conditions, however, this method of handling sewage can be advantageous. Work is now being completed on drafts of new rules for the use of such water to irrigate agricultural fields and for maintaining preventive and current surveillance over such practices. A major question is the location of such fields, and the new draft specifies that they must be from 150-1,000 meters away from residential, children's, or medical facilities, and doctors may
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- 80 -

USSR .

LORANSKIY, D. , et al., Meditsinskaya Gazeta, 24 Dec 71, p 2

increase this 1.5-2-fold if necessary. If the sprinkling method is used, a minimum distance of 1,000 meters must be observed, and helminths must be removed from the water. Settling ponds are essential for this method of sewage disposal, but they must have trees and bushes planted thickly around to prevent the spread of Culex mosquitoes. The new draft provides that food crops will not be grown on such irrigated fields, which is not a large setback since perennial grasses, feeds, and industrial crops grow best anyway. Under the new rules, it will require a special permit to use industrial runoff for irrigation purposes, and this permit must be based on careful scientific investigation.

2/2

USSR   UDC: 519.1

GORBOVITSKAYA, N. A.

"Concerning the Question of Existence of a Finite System of Rules for Automata in Bases of Two-Valued Elements"

Moscow, Probl. kibernetiki--sbornik (Problems of Cybernetics--collection of works), vyp. 26, "Nauka", 1973, pp 265-278 (from RZh-Matematika, No 9, Sep 73, abstract No 9V459 by O. Lupanov)

Translation: The author constructs a (finite) example of a system of functional elements with delays which operate in two-valued logic for which there exists no complete finite system of rules of equivalent transformations of circuits without feedbacks. Analogous examples for formulas in k-valued logic have been constructed by R. K. Lyndon ($k = 7$, Trans. Amer. Math. Soc., 1951, 71, No 3), V. V. Vishin ($k = 4$, RZhMat, 1964, 2V151), and V. L. Murskiy ($k = 3$, RZhMat, 1965, 12A101); and for circuits with feedback with $k = 2$ by V. L. Murskiy (RZhMat, 1964, 12V221). In the case of $k = 2$ and circuits without feedback and without delay there always exists a complete finite system of equivalent conversions (RZhMat, 1955, 4286).

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Acc. Nr: AP0040326   G   Ref. Code: UR 0481

PRIMARY SOURCE: Eksperimental'naya Khirurgiya i Anesteziologiya,
1970, Nr 1 , pp 32-34

ON SUSTAINED HAEMODIALYSIS

Galchikov, V. I.; Trikashchnyy, A. A.; Koslov, Yu. M.;
Gorbovitskiy, Ye. B.

A preliminary report on sustained haemodialysis with a small
dialyzer.

REEL/FRAME
19741757

USSR . UDC: 615.361.014.413:681.3

KOMAROV, B. A., GORBOVITSKIY, Ye. V., BELOVA, I. A., and ZLOTNIKOV, V. P., All-Union Scientific Research Institute of Surgical Apparatus and Instruments

"An Apparatus for Deep Cooling of Biological Objects With Programmed Control"

Moscow, Meditsinskaya Tekhnika, No 1, 1971, pp 51-53

Abstract: A description (with photograph, line diagram, and specifications) of the KZ-8 apparatus designed by the All-Union Scientific Research Institute of Surgical Apparatus and Instruments for programmed cooling of bone marrow, blood, and other tissues, is given. When the actual temperature is different from that called for at a particular moment by the program, various mechanisms (pump, heaters) are activated at a signal from a 3-position regulator. When the actual temperature of the object is higher than that prescribed, the pump is switched on. A vacuum is created in a pipeline - heat exchanger - Dewar flask system and liquid nitrogen enters the heat exchanger which it cools upon evaporating. If the actual temperature is below that prescribed, the heaters are turned on. The heat exchanger is immersed in ethyl alcohol, petroleum ether, ethylene glycol, etc. into which containers with bone marrow, blood, etc. are set.

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- 61 -

USSR   UDC: 669.245'27'292.018.67(088.8)

NAM, B. P., D'YAKOV, I. G., IVANOV, V. I., POZDNYAKOV, V. V., REZONTOV, B. I.,
GORBUL'SKIY, L. F.

"Alloy for the Centers of the Oxide Cathodes of Electric-Vacuum Devices"

USSR Author's Certificate Number 358397, Filed 23/07/70, Published 18/01/73
(Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No
8I711P, by 0. Pimenova).

Translation: An alloy is suggested for the cores of the oxide cathodes of
electric vacuum devices, differing from known alloys in that in order to
improve the sublimation characteristics of the core, increase the stability
of the electrical parameters and the durability of electric-vacuum devices,
V is introduced in the following ratio of components (%); W 2.0-4.0, V 0.05-0.8,
Ni -- remainder. The mechanical properties in the annealed state are: σ_b 42,
20 and 11 kg/mm^2, δ 45, 43 and 36% at 20, 600 and 800° respectively; in the
cold worked state σ_b 79 kg/mm^2, δ 2% at 20°, ρ at 20, 600 and 800° 0.174,
0.462 and 0.518 ohm·mm^2/m respectively, T_{rec} 600°. The rate of evaporation
of the activator (in mg·cm^2/hr) in a vacuum of $1·10^{-7}$ mm hg is $1.5·10^{-8}$ at

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USSR

Nam, B. P., D'yakov, I. G., Ivanov, V. I., Pozdnyakov, V. V., Rezontov, B. I., Gorbul'skiy, L. F., USSR Author's Certificate Number 358397, Filed 23/07/70, Published 18.01/73.

$750°$, $1.7 \cdot 10^{-7}$ at $840°$, $2.7 \cdot 10^{-6}$ at $930°$ and $8.3 \cdot 10^{-6}$ at $1000°$.

2/2

- 84 -

USSR   _ UDC 536.46:533.6

TODES, O. M., GOL'TSIKER, A. D., GORBUL'SKIY, Ya. G., IONUSHAE, K. K.

"On the Propagation of a Plane Flame Front in Aerodisperse Systems"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works),
Moscow, "Nauka", 1972, pp 166-170 (from RZh-Mekhanika, No 3, Mar 73, Abstract
No 3B964)

Translation: The technique for calculating the propagation velocity of the
standing flame front in aerodisperse systems was developed from the studies of
Nusselt and Esseng. Radiant flow from the flame front heats the aerosuspension
located ahead of it up to its combustion temperature under conditions that ensure
the possibility of steady-state propagation of the front with velocities from
meters up to tens of meters per second. The possibility of the inhibition of
flame propagation in the aerosuspension was analyzed theoretically and supported
experimentally. 5 ref. Authors' abstract.

1/1

GORBUNKOV V.M.

AA0047013   UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent,

2/70

242282   BUBBLE CHAMBER ILLUMINATION SYSTEM
          as in 213201, has the side surface of
          the bubble chamber designed as a cylindrical
          reflector mirror. An optical autocollimation
          system at the bottom is fitted on its periphery
          with an annular mirror in the shape of a part of a
          torus. The centrode of the torus describes a circle
          of the same radius as the chamber cylinder and the
          radius of curvature of the torus equals the height
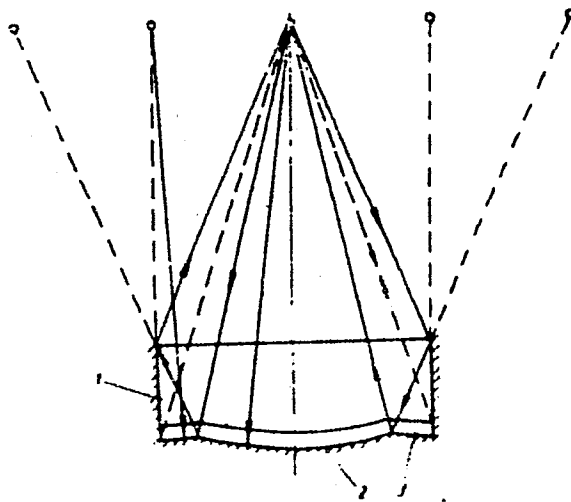   of the autocollimation system.
          20.4.66. as 1071728/26-25, Add to 213201
          GORBUNKOV, V.M. (15.9.69) Bul. 15/25.4.69. Class
          21g, Int. Cl. G 21c.]

21

19790445

AA0047013

2/2

19790446

GORBUNOV, A. A.

mechanical engineering

A. A. Gorbunov and M. F. Dimentberg (Moscow)

DETERMINATION OF RANDOM FORCED OSCILLATIONS AND SELF-OSCILLATIONS PERTURBED BY RANDOM ACTIONS

The problem consists in determining whether a measured narrow band random process at the output of an oscillating system consists of forced oscillations of the system under the influence of external wide band random perturbations or whether the system is in the state of self-oscillations, modeled by random noise as a result of random perturbations at the input of the system. The solution to this problem in many cases can indicate what source of excitation is making the basic contribution to the vibration of the mechanical system.

Two recognition criteria are suggested for an object which can be represented by a second order equivalent quasi-linear system, based on analysis of the probability densities of the envelope of the output process or the process itself. The first criterion follows from solution of the Fokker-Planck equation, corresponding to an abbreviated equation for the amplitude. The second criterion is produced on the basis of the known integral dependence between the probability densities of a narrow band random process and its envelope. The accuracy of the second criterion has been tested by analog computer modeling and was found to be good even in the case of rather short intervals of observation of the output process.

Heat, Combustion, Detonation

SALOMATOV, V. V. and GORBUNOV, A. D.

"High-Temperature Heating of Construction Elements With Active
Ablation Coatings"

Abstract: This brief communication considers the problem of de-
termining the optimal thickness of the ablation coating in a sys-
tem involving a high-temperature gas medium, the active coating
layer, and a metal wall, for protecting the metal from heat.
Since the problem is essentially nonlinear, the authors use the
method of the thermal quasi-stationary approximation, and ob-
tain relationships for computing the temperature field in the
protected structural element for an arbitrary thermal flux on
the ablation surface. They analyze the dynamics of the abla-
tion process and derive a solution for the Fourier number, the
expression for which is quite complex but can be simplified for
several limiting cases considered in this article. A nomogram
is given for computing the ablation process of the active coat-
ing for various measured thermal fluxes.
 1/1

1/2   019   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MIXTURE FOR INOCULATING IRON MELTS -U-

AUTHOR-(03)-GORBUNOV, A.I., SEVASTYANOV, N.S., SABUROV, V.P.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,138
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--INOCULATION, IRON, LIQUID METAL, CARBON, CALCIUM, METALLURGIC
   PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1059   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0130094
                        UNCLASSIFIED

CIRC ACCESSION NO--AAC130094
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   A MIXT. FOR INOCULATING FE,C
   MELTS, THAT RAISES THE DEGREE OF CA ASSIMILATION AND REMOVES THE
   PYROEFFECT, CONTAINS CA INTRODUCED IN THE FORM OF A METAL AND FLUORSPAR
   IN A 1:2 RATIO.   FACILITY: OMSK POLYTECHNIC INSTITUTE.

UNCLASSIFIED

USSR   UDC: 51:621.391

GORBUNOV, A. K.

"Rate of Information Generation by a Stationary Source of a
Continuous Argument Without Anticipation and With Prognosis"

Moscow, Tr. Mosk. Fiz.-tekhn. in-ta. Ser. Radiotekhn. i elektron.
Ch. 1 (Transactions of the Moscow Physical-Technical Institute,
Electronics Engineering Series, Part 1) 1972(1973), pp 45-54 (from
RZh--Matematika, No 1, 1974, Abstract No 1V436)

Translation: The epsilon entropy and rate of generation of infor-
mation from sources without anticipation and with prognosis are
considered. An expression is obtained for the rate of generating
information without anticipation and with prognosis by a Gaussian
stationary source of a continuous argument at whose input the in-
formation is an n-dimensional Markov process with independent com-
ponents. An expression is found for the rate of generation of in-
formation without anticipation by a Gaussian stationary source of
continuous argument for the case in which the information at the input
has rational spectral density. Author's resume.

1/1

B.   Information Theory

GORBUNOV, A. K., PINSKER, M. S.

"Epsilon Entropy Without Anticipation and With Prognosis"

Translation: The paper takes up the concepts of epsilon-entropy, and
also the rates of creation of messages by a source without anticipation
and with prognosis. In introducing these concepts, it is taken into
consideration that in recovering a message after transmission through a
channel at some instant the initial message is known either by the
instant coinciding with that to be determined, or prior to it.
     It is pointed out that for stationary sources the rate of creation
of messages is always defined and in a broad class of cases is realized
with respect to stationary pairs of input and output messages; for
Gaussian messages epsilon-entropy is realized with respect to Gaussian
pairs of input and output messages. For a Markov Gaussian message and

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USSR

GORBUNOV, A. K., PINSKER, M. S., Inform. metody v sistemakh upr., iz-
mereniy i kontrolya, T. 1, 1972, pp 5-14

source the paper gives representations of the output messages which
realize epsilon-entropy, and the rate of creation of messages by the
source; expressions are also written out for the epsilon-entropy and
rate of creation of messages.

2/2

USSR

GORBUNOV, A. K. and PINSKER, M. S.

"Epsilon Entropy and the Speed of Generating Messages Without Anticipation and With Prognosis"

Abstract: This article is based on and uses the notation of an earlier article written by the second of the authors named above for the same journal (Istochniki soobshcheniy -- Communication Sources -- vol 14, 1965, pp 5-20). The present article introduces the concepts of communication epsilon entropy and the speed of generating messages by a source without anticipation and with prognosis. These concepts arise when, at the time the message is reproduced after its transmission, the original message is known either before a particular moment or before a time preceding that moment. It is shown that except for pathological cases, the speed of message generation for stationary sources is always determined and is realized, in a number of cases, by stationary pairs of input and output messages. The problems examined in this paper are solved for sources with discrete as well as continuous time and with any abstract sets of states.
1/1

USSR

UDC: 51.621.391

GORBUNOV, A. K. and PINSKER, M. S.

"Epsilon Entropy With Prognosis and Without Anticipation"

Vladivostok, V sb. Inform. metody v sistemakh upr. izmereniy i kontrolya. T. 1 (Information Methods in Systems for Regulation of Measurements and Control, Volume 1--collection of works) 1972, pp 5-14 (from RZh--Matematika, No 7, 1973, Abstract No 7V453)

Translation: Concepts of epsilon entropy as well of speeds of generating messages by a source with prognosis and without antici- pation are considered. In the adoption of these concepts it is understood that with the restoration of the communication after its transmission over the channel at some moment of time, the original communication will be known either before the moment coinciding with a definite moment in time or preceding it.

It is indicated that for stationary sources the speed of generating the message is always defined and is realized in a broad class of cases by stationary pairs of input and output messages. For a Markov Gaussian message and and the source, representations are given of the outgoing message realizing
1/2

USSR

GORBUNOV, A. K. and PINSKER, M. S., Inform metody v sistemakh upr. izmereniy i kontrolya. T. 1, 1972, pp 5-14

epsilon entropy and of the speed of generation of the messages by the source, and an expression is written for the epsilon entropy and the speed of message gener-ation. From the authors' introduction.

2/2

USSR

ZAPEVALOV, P. P., and GORBUNOV, A. T.

"Study of Emulsification of Liquids by Ultrasound"

Nauch. Tr. Omsk. S-Kh. In-t., [Scientific Works of Omsk Agricultural Institute]
No 84, 1971, pp 118-128 (Translated from Referativnyy Zhurnal Khimiya, No 5,
Moscow, 1972, Abstract No 5N681 by I. P.)

Translation: The influence of emulsification conditions of 2,4-D butyl ester
(I) using a magnetostriction US oscillation radiator was studied. Introduction
of OP-7 $\geq$ 3% to I allows the production of a stable emulsion with a concentra-
tion of the dispersed phase of $\leq$ 15%. However, magnetostriction radiator in-
stallations are cumbersome, require much power and have a low productivity
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ZAPEVALOV, P. P., and GORBUNOV, A. T.

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1/1

- 71 -

USSR   UDC   8.74

GORBUNOV, A. V.

"A Programming System Based on a Language for Describing Homogeneous Logic
Circuits"

Tr. in-ta elektron. upravl. mashin (Works of the Institute of Control Com-
puters), 1971, vyp. 18, pp 26-29 (from RZh-Matematika, No 1, Jan 73, abstract
No 1V802 by V. Mikheyev)

Translation: As an analytical tool for circuit programming the author pro-
poses using the "Skhemokod" language for describing the logic circuits of
digital devices. Logic formulas in scalar and dimensional form serve as the
basis of the descriptive apparatus of the "Skhemokod" language. It is noted
that calculation of a data block (state of the register, groups of flip-flops,
etc.) is recorded by a single logic formula in dimensional form. The rules
for matching dimensionalities of data blocks, the variables in the first and
second members of the logic formula, stem from the principles of construction
of logic circuits in digital devices. With these rules, homogeneous branch-
ing of data transmission circuits can be described by a single dimensional
logic expression. The "Skhemokod" language incorporates the tabular value of

1/2